

Applicant : John C. Nardi  
Serial No. : 09/213,544  
Filed : December 17, 1998  
For : Alkaline Cell Having a Cathode Incorporating Enhanced Graphite

Art Unit: 1745  
Examiner: C. Chaney

### REMARKS

Claims 1-13 and 15-21 are pending in the application. Reconsideration and reexamination of the application are respectfully requested.

Subsequent to the Request for Continued Examination and fee filed on May 15, 2003, the appeal in the above-identified application has been withdrawn and prosecution reopened.

In the Office action mailed on July 1, 2003, the Examiner rejected all claims pending in the application under 35 USC § 103a) as being unpatentable over Mototani et al., U.S. Patent No. 5,482,798. The Examiner found that Applicant's declaration submitted with the Request for Continued Examination fails to present clear and convincing evidence that one of ordinary skill in the art would not have been able to make the expanded graphite material of Mototani et al. or that graphite made according to the specific method of Mototani et al. has different kerosene absorption values than the expanded graphites claimed. Applicant disagrees for the reasons below and submits additional supporting data in the declaration being submitted herewith.

Claim 1 of the above-identified application recites an electrochemical cell comprising a positive electrode having an active material and an electrically conductive carbon material including expanded graphite particles having a kerosene absorption value in the range of 2.2 to 3.5 ml/g. Independent claim 16 is also directed to an electrochemical cell having these same features as well as others.

The claims were rejected as obvious over Mototani et al., in which alkaline manganese batteries containing manganese dioxide and expanded graphite are disclosed. The Examiner asserted that the disclosure of Mototani et al. differs from claim 1 of the present application in that Mototani et al. do not disclose kerosene absorption values. The Examiner also asserted that, because both Mototani et al. and the present application disclose that expanded graphite are formed by similar processes (i.e., introducing sulfuric acid into graphite and then rapidly heating the graphite to about 1000°C), the expanded graphite materials produced have similar properties, including kerosene absorption values.

In the declarations filed on May 15, 2003, and October 16, 2000, Applicant presented evidence showing that expanded graphite made from flake graphite treated with concentrated sulfuric acid and heated at 950° to 1100°C to expanded graphite can have a kerosene absorption

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value less than 2.2 ml/g. The Examiner pointed to differences between the method used to make the exemplary expanded graphite with a kerosene absorption value less than 2.2 ml/g and the method disclosed by Mototani et al. and concluded that the exemplary expanded graphite cannot be the Mototani graphite or equivalent thereto. In particular, the Examiner concluded that expanded graphite made by treating flake graphite with concentrated sulfuric acid and a strong oxidant such as hydrogen peroxide, hydrochloride peroxide or magnate peroxide is different from expanded graphite made by introducing sulfuric acid between interlayers of artificial graphite, as disclosed by Mototani et al. when Mototani et al. do not suggest also treating graphite with a strong oxidant.

If, however, expanded graphite made by a process including treatment with sulfuric acid and a strong oxidant such as hydrogen peroxide, hydrochloride peroxide or magnate peroxide is different from expanded graphite made by introducing sulfuric acid only, without such a strong oxidant, then expanded graphite made by a process including treatment with sulfuric acid and a strong oxidant such as nitric acid, as disclosed in the present application, is also different from expanded graphite made according to the teachings of Mototani et al. Therefore, one cannot conclude that expanded graphite made according to Mototani et al. inherently has properties, including kerosene absorption, similar to those of the expanded graphite made by the method disclosed in the present application.

New information presented in the enclosed declaration by the Applicant clearly shows that expanded graphite made according to Mototani et al. does not inherently have a kerosene absorption value within the range of 2.2 ml/g. This information shows that when either synthetic graphite or natural graphite is made according to the method disclosed by Mototani et al., including treatment with  $H_2SO_4$  only, rather than with  $H_2SO_4$  and a strong oxidant, the kerosene absorption value can be well below 2.2 ml/g.

For the above reasons, the kerosene absorption value of expanded graphite made according to the teachings of Mototani et al. is not necessarily within the range of 2.2 to 3.5 ml/g, and the rejection of claims 1-13 and 15-21 under 35 USC § 103(a) as unpatentable over Mototani et al. is respectfully traversed.


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It is believed that the application is in condition for allowance. Withdrawal of the rejection and allowance of claims 1-13 and 15-21 are requested.

Respectfully submitted,

Date: 12/1/03

  
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